Complete Listing of the Claims

Claims **1-10.** (canceled)

Claim **11.** (withdrawn) A method to derive selected physical properties of a sample passing successively through a set of detectors using a combination of the signals produced by said detectors responding to said sample passing therethrough when some of said detectors exhibit band broadening of their signals, comprising the steps of

a) Applying a parameterized broadening function to said detector set to derive thereby a corresponding set of detector signals, all of which have comparable broadening; and

b) Using said detector signals now broadened, following application of said broadening function, to derive said selected physical properties of said measured sample.

Claim **12.** (withdrawn) The method of Claim **11** where said application of said parameterized broadening function is given by $D_i^b(t) = \int_{-\infty}^{\infty} D_i(t-\tau) B\left(\alpha_{ij}', \tau - \tau_i'\right) d\tau$ where $D_i^b(t)$ are the said detector signals now broadened, α_{ij}' and τ_i' are said best fit parameters of Claim **2**.

Claim **13.** (withdrawn) The method of Claim **11** where said selected physical properties, to be determined from the relation $R(\theta) = K^* M_w c P(\theta)[1 - 2A_2 M_w c P(\theta)] + O(c^3)$, are the weight averaged molar mass, M_w, and the root mean square radius, r_g, of said sample derived from concentration signals, $c(t)$, and the excess Rayleigh ratios, $R(\theta,t)$, derived from i light scattering signals from a detector set comprised of light scattering

detectors, $D_i(t)$, and a dRI detector in sequence, said dRI detector producing a concentration signal exhibiting broadening relative to said light scattering detector signals, where said light scattering detector signals have been broadened.

Claim **14.** (withdrawn) The method of Claim **11** where said detector signals are from a UV detector followed by a multiangle light scattering detector and said multiangle light scattering signals are broadened.

Claim **15.** (withdrawn) The method of Claim **11** where said detector signals are from a refractive index detector followed by a viscometer detector and said refractive index detector signals are broadened.

Claim **16.** (withdrawn) The method of **11** where said broadening function is given by

$B(t) = \int_{-\infty}^{\infty} \frac{1}{\sigma\sqrt{2\pi}} e^{-\tau^2/2\sigma^2} \frac{1}{w} U(t-\tau) e^{-(t-\tau)/w} d\tau$, where U(t-τ) =1 when

t $\geq \tau$ and =0 when t<τ.

Claim **17.** (withdrawn) The method of Claim**16** where said optimal parameters of said broadening function have been determined by the method of Claim**1**.

Claim **18.** (canceled)

Claim **19**. (amended) A method to determine the best fit parameters of a broadening model to be used to correct for the effects of interdetector band broadening in a chromatographic separation containing a separation device followed by two or more

detectors i (=1,n) , where n is the number of detectors, comprising the steps of

A. Selecting a broadening model $B(\alpha_0, \alpha_1, \ldots, \alpha_l, t)$ containing a set of adjustable parameters α_j (=0, …, l), where l is the number of adjustable parameters;

B. Injecting a reference sample;

C. Collecting the i detector signals ~~in time~~ $D_i(t)$ as a function of time corresponding to a peak of uniform composition from each of said detectors of said sample, where a peak is defined as a range of time during which the sample of uniform composition elutes;

D. ~~defining~~ Defining the ~~most broadened peak as that corresponding to the peak having~~ reference signal $D_n(t)$ as that which exhibits the broadest temporal response[[.]];

E. For each detector i, ~~Forming~~ forming a [[χ^2]] χ_i^2 model ~~to be minimized over a peak of said sample to be broadened using said collected signal of the most broadened peak as a reference against which said other detector peaks are to be compared;~~ which is derived from said broadening model, and is to be minimized over said peak using said signal $D_n(t)$ as a reference against which the said detector i is to be compared;

$\chi_i^2(\beta_i, \tau_i, \alpha_{ij}) = \int_{peak} \left(D_n(t) - \beta_i \int_{-\infty}^{\infty} D_i(t-\tau) B(\alpha_{ij}, \tau - \tau_i) d\tau \right)^2 dt$, where said best fit parameters are β_i, α_{ij}, and τ_i; and

~~(1) said best fit parameters are the β_i, α_{ij}, and τ_i; and~~

(a) [[the]] β_i [[are]] is the scale factor[[s]] for detector *i*;

(b) [[the]] α_{ij} characterizes the extent of the broadening for detector *i* and parameter *j*; and

(c) [[the]] τ_i [[are]] is the interdetector time delay[[s]] for detector *i*.

~~(2) the i detectors' responses as a function of time are the $D_i(t)$ and said model is minimized over said peak.~~

F. Minimizing said [[χ^2]] χ_i^2 models to ~~determine~~ yield said best fit parameters for ~~each of~~ said detector peaks~~ to be broadened so that their broadened and normalized shapes are a best fit to said shape of said detector producing said broadest temporal response~~.

Claim **20**. (amended) The method of Claim **19** where the minimization of said χ_i^2 models [[is]] are achieved by use of a nonlinear least squares algorithm.

Claim **21**. (previously presented) The method of Claim **20** where said nonlinear least squares algorithm is of the type developed by Marquardt.

Claim **22**. (amended) The method of Claim **19** where said interdetector band broadening is caused by dilution.

Claim **23**. (amended) The method of Claim **19** where said interdetector band broadening is caused by mixing.

Claim **24**. (amended) The method of Claim **19** where said <u>interdetector</u> band broadening is caused by mechanical defects within the detector cells and/or connectors thereto.

Claim **25**. (amended) The method of Claim **19** where said <u>interdetector</u> band broadening is caused by internal instrumental averaging.

Claim **26**. (previously presented) The method of Claim **25** where said internal instrumental averaging is from electronic filtering.

Claim **27**. (previously presented) The method of Claim **25** where said internal instrumental averaging is by measuring a range of volumes of the sample.

Claim **28**. (previously presented) The method of Claim **19** where said peaks of uniform composition correspond to monodisperse fractions which are separated from the other fractions by said chromatographic separation.

Claim **29**. (amended) The method of Claim **19** where said peaks of uniform composition correspond respectively to fractions for which said ~~chromatographic~~ separation device <u>is ineffective and</u> produces no appreciable separation so that said sample elutes with a uniform composition.

Claim **30**. (amended) The method of Claim **19** where said broadening model is given by

$B(\alpha_1,\alpha_2,t) = \int_{-\infty}^{\infty} \frac{1}{\alpha_1\sqrt{2\pi}} e^{-\tau^2/2\alpha_1^2} \frac{1}{\alpha_2} U(t-\tau) e^{-(t-\tau)/\alpha_2} d\tau$, <u>where α_1 and α_2 are parameters</u>

that characterize said interdetector band broadening; the parameter α_1 characterizes Gaussian broadening due to internal instrumental averaging, and α_2 characterizes an interdetector mixing volume; and where $U(t-\tau)=1$ when t $\geq \tau$ and $U(t-\tau)=0$ ~~and~~ when t< τ.